

I. REMARKS

Claims 1-5 are pending in this application and are submitted for consideration. No amendments to the specification or claims are made by this Response. Applicants respectfully request reconsideration and withdrawal of all rejections.

Claims 1-5 are rejected under 35 U.S.C. § 103(a) over Deibert et al. (U.S. Patent No. 3,442,715) in view of Joshi et al. (U.S. Patent No. 5,454,922). Applicants traverse the rejection.

Claim 1 of the presently claimed invention is directed to a "paste composition for making electrodes of fuel cells, comprising a carbon black supporting a hydrogen reduction catalyst, an electrolyte, an organic solvent with a boiling point of 100 to 200°C, and a water-soluble organic solvent with a boiling point of less than 100°C" (emphasis added). Claims 2-5 depend from independent claim 1.

In contrast, Applicants submit that Deibert et al. merely discloses a diffusion membrane electrode in which generally "[m]ixtures of organic liquids" may be employed (Deibert et al., col. 4, lines 53-54). Applicants submit that Deibert et al. does not teach or suggest a paste composition for making electrodes which comprises both "an organic solvent with a boiling point of 100 to 200°C and a water-soluble organic solvent with a boiling point of less than 100°C" (claim 1) (emphasis added). In other words, Applicants submit that Deibert et al. only discloses, in general, that mixtures may be used, but it does not unambiguously and specifically teach or suggest a composition having both: (1) an organic solvent with a boiling point of 100 to 200°C, and (2) a water-soluble organic solvent with a boiling point of less than 100°C" (claim 1). For instance, in Examples 2, 3, and 4 of Deibert et al.

discloses a composition having a mixture of isopropanol (which has a boiling point of 82°C) and benzene (which has a boiling point of 80°C).

Further, Applicants submit that Deibert et al. does not disclose or suggest the unexpected and remarkable effects of having a paste composition for making electrodes which comprises both an organic solvent with a boiling point of 100 to 200°C and a water-soluble organic solvent with a boiling point of less than 100°C. Applicants submit that the paste composition of the presently claimed invention unexpectedly is “excellent in storage stability, [and] can give electrodes that have a sufficient pore volume for high generating performance” (specification, page 2, lines 3-5) (emphasis added). Further, Applicants submit that the presently claimed composition “comprises organic solvents of a specific boiling point... [which] make it possible for the solvent of the paste composition to evaporate at a controlled rate under drying conditions in the electrode production” (specification, page 2, lines 6-9) (emphasis added). This is demonstrated in Examples 1-3 and comparative Examples 1-4, which show that compositions with a mixture of both an organic solvent with a boiling point of 100 to 200°C and a water-soluble organic solvent with a boiling point of less than 100°C unexpectedly had greater pore volume than compositions with only a water-soluble organic solvent with a boiling point of less than 100°C (see Table 1, specification, pages 23-24). Further, compositions with a mixture of solvents, as presently claimed, unexpectedly have greater storage stability than compositions with only a water-soluble organic solvent (see Table 2, specification, pages 25).

As such, Applicants submit that based on the teachings of Deibert et al. and without the benefit of hindsight, one of ordinary skill in the art would not have known that the compositions of the presently claimed invention would have these unexpected

results. Applicants submit that Deibert et al. provides no guidance to achieve these unexpected properties.

Further, Applicants submit that Joshi et al. fails to satisfy the deficiencies of Deibert et al., as Joshi et al. fails to teach or suggest a paste composition for making electrodes which comprises both “an organic solvent with a boiling point of 100 to 200°C and a water-soluble organic solvent with a boiling point of less than 100°C” (claim 1).

Applicants submit that Joshi et al. merely generally discloses “a fluid-dispensing, electrochemical pump... [which] utilizes an electrochemical cell having a thin-walled, substantially non-porous polymeric ionomer, such as polyperfluoro-sulfonated ethylene, which has one ionic/electronic conducting electrode capable of reducing oxygen in the presence of watts or protons and another electronic/ionic conducting electrode suitable for oxygen evolution” (Joshi et al., col. 3, lines 3-9). Applicants submit that although Joshi et al. generally mentions the use of “alcohols and water” and glycerol in ink preparation (Joshi et al., col. 10, lines 13-14), Joshi et al. fails to teach or suggest a composition with “an organic solvent with a boiling point of 100 to 200°C and a water-soluble organic solvent with a boiling point of less than 100°C” (claim 1). For example, glycerol is known to have a boiling point of 290°C, and therefore, it is not an organic solvent with a boiling point of 100 to 200°C or a boiling point of less than 100°C. Further, like Deibert et al., Joshi et al. fails to teach or suggest a composition with improved storage stability and increased pore volume, much less what is necessary to achieve such properties.

As such, Applicants submit that Deibert et al. and Joshi et al. fail to teach or suggest all of the elements of the presently claimed invention, as set forth in

independent claim 1 and dependent claims 2-5. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-5 under 35 U.S.C. § 103(a) over Deibert et al. in view of Joshi et al.

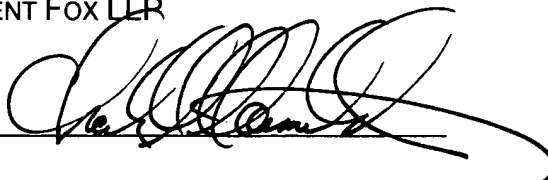
II. CONCLUSION

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this response is not timely filed, Applicants hereby petition for an appropriate extension of time. The fee for this extension, along with any other additional fees which may be required with respect to this response, may be charged to Deposit Account No. 01-2300, referencing Attorney Docket No. 026035-00009.

Respectfully submitted,

ARENT FOX LLP

A handwritten signature in black ink, appearing to read 'Charles M. Marmelstein', is written over a horizontal line.

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Enclosure: Two (2) month Petition for Extension of Time